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### CARIDEAN SHRIMPS FROM LORD HOWE ISLAND

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#### ABSTRACT

Eleven species of caridean shrimp are reported from Lord Howe Island, the most southerly of Indo-West Pacific coral reefs. Only one species has been previously reported. They are mainly common species of wide distribution and all except one, *Rhynchocinetes balssi*, are common on the Great Barrier Reef but have not been found in New Zealand waters. Undoubtedly many more carideans remain to be collected and identified at Lord Howe Island.

#### INTRODUCTION

The coral reef communities of Lord Howe Island are of particular interest as they constitute the most southerly example of this biotope in the Indo-West Pacific region, at a latitude of 31.5°S, and their isolation by deep water troughs from the Great Barrier Reef, New Caledonia and New Zealand. It lies at a distance of 630 km from the nearest major land mass, the northern coast of New South Wales.

Although the coral fauna and the fish fauna have been studied in detail (Veron & Done, 1979; Allen *et al.*, 1970), there appears to have been few reports on the crustacean fauna of this locality. Through the kindness of N. Coleman (Australian

Marine Photographic Index) a number of specimens of caridean shrimps have been made available and are here reported upon. The specimens are deposited in the collections of the Northern Territory Museum.

Restricted synonymies only are provided. Full bibliographies for the species dealt with can be found in Holthuis (1947, 1952); and Banner & Banner, (1975, 1982). CL refers to the post-orbital carapace length in mms. NTM and AMPI refer to the Northern Territory Museum and Australian Marine Photographic Index catalogue numbers respectively.



Fig. 1. *Rhynchocinetes balssi* Gordon: ♂, CL 4.3mm, rostrum.

#### RHYNCHOCINETIDAE

##### *Rhynchocinetes balssi* Gordon (Fig. 1)

*Rhynchocinetes balssi* Gordon, 1936:85-87, Tiefenbacher, 1982:123, 124.

*Material examined* — 1♂, CL 4.3, Erscott's Hole, 4m, 13 December 1979, AMP1 955, NTM. Cr. 000545.

*Remarks* — The single example has the rostrum as illustrated in fig. 1. The fourth and fifth pleura were without postero-lateral spines and a small arthrobranch was distinct on the first pereopod but absent from all other pereopods, a feature unique to this species (Gordon, 1936; Tiefenbacher, 1982).

*Colouration* — Body generally translucent, with mainly longitudinal dark red-brown lines on posterior carapace and fourth to sixth abdominal segments. Similar lines present on anterior carapace, interspersed with white dots on gastric region, oblique lines on first abdominal segment and transverse bars on second segment dorsally, separated by a posteriorly curved bar of white over the anterior portion of the third segment, with a pair of semicircular lines over the posterior lobe and with submedian, dorsolateral and lateral lines along the fourth, fifth and sixth segments, with white median spots. The

anterolateral borders of the telson are a similar red-brown. The tip of the rostrum is white, antennal flagella dull reddish, third to fifth pereopods with propod and carpus pink, with white lateral line, merus translucent with bands of dark brown, yellow and dark brown on proximal and distal halves, with a similar group on the ischium. Uropod pale yellow-white, with dark red brown band down centre of inner ramus.

*Distribution* — Previously recorded only from New Zealand and Juan Fernandez.

#### PALAEEMONIDAE : PONTONIINAE

##### *Periclimenes ornatus* Bruce

*Periclimenes ornatus* Bruce, 1969:266-267.

*Material examined* — 1 ovig. ♀, CL 4.7, Comet's Hole, 5m, 11 December 1979, AMP1 970, NTM Cr. 000546.

*Remarks* — The single example presents no special features. It has a rostral dentition of 8/1 and the dactyls of the ambulatory pereopods are without any trace of an accessory tooth.

The species is normally found in association with anemones of the family Stichodactylidae, particularly *Entacmaea* and *Heteractis* spp.

**Colouration** — The single example shows the typical colour pattern of this species with numerous deep blue and white dots on the appendages and caudal fan, a pinkish longitudinally striate ventral abdomen, white dorsal eye stripe and white median ventral abdominal band.

**Distribution** — Known only from Hong Kong (type-locality), Japan, the Marshall Islands, southern Great Barrier Reef, Kenya and Red Sea.

***Periclimenes madreporae* Bruce**

*Periclimenes madreporae* Bruce, 1969:262-263.

**Material examined** — 1 ♂, 1 ♀ CL 1.7, 1.9 mm, Erseott's Hole, 4m, 13 December 1979, AMPI 958, NTM Cr. 000458.

**Remarks** — The two specimens present no special features. They both have a rostral dentition of 6/1. *P. madreporae* has been found as a common commensal of a wide variety of Great Barrier Reef Corals (Bruce, 1983).

**Distribution** — Previously known from the Great Barrier Reef, Solomon Islands and La Réunion. Probably common in the western Pacific Ocean.

***Periclimenes holthuisi* Bruce**

*Periclimenes holthuisi* Bruce, 1969:258-259

**Material Examined** 1 ovig. ♀, CL 5.0, Malabar Is., 17m, 29 November 1979, AMPI 997, NTM Cr. 000549; 1 ♂, CL 3.4, Malabar Is., 10m, 30 November 1979, AMPI 994, NTM Cr. 000548; 2 ♀ (1 ovig.), CLs 5.6, 4.6 (ovig.), Malabar Is., 15m, 23 February 1980, AMPI 1013, NTM Cr. 000550; 1 ♂, CL 3.5, Tenth of June Island, 20m, 29 December 1979, AMPI 971, NTM Cr. 001137.

**Remarks** — The five specimens are typical and present no special features. This species is most commonly found on actinarians but has also been found in association with scleractinian corals and scyphozoans. The

associated photograph shows the specimen on an aleyonarian.

**Colouration** — As previously noted. Female with conspicuous eyespots on uropods, with white patches on first to third pleura outlined with red brown; chelae of second pereopods white banded with blue, white dorsal eyestripe, colourless antennal peduncles; dorsum of third abdominal segment with a broad anterior zone of pink and a smaller posterior zone of white.

**Distribution** — Previously known from the Red Sea; throughout the Indian Ocean, Indonesia, New Guinea and east to Palau Islands. Recorded from the Great Barrier Reef and New Caledonia.

***Harpiliopsis depressa* (Stimpson)**

*Harpilius depressus* Stimpson, 1860:38.

*Harpiliopsis depressus* Holthuis, 1951:70-75, pl. 21, 22 a-f, pl. 21a-i, 22 a-f.

**Material examined** — 2 ♂, 1 ovig. ♀, CLs 2.7, 3.3; 4.2, Erseott's Hole, 4m, 13 December 1979, AMPI 959, NTM Cr. 000547; 1 ♂, CL 2.7, Erseott's Hole, 3m, 19 December 1979, AMPI 1063, NTM Cr. 000552; 1 ovig. ♀, CL 3.5, Malabar Is., 15m, 23 February 1980, AMPI 1009, NTM Cr. 000551.

**Remarks** — The Malabar Island specimen lacks both second pereopods but agrees closely in other features with the other specimens, which have the characteristic robust chelae that distinguish this species from *H. spinigera*.

This species is normally found in association with pocilloporid corals and is one of the relatively few Indo-West Pacific carideans that have ranges extending into the Eastern Pacific region.

**Distribution** — Common and widely distributed throughout most of the Indo-West Pacific region from the Red Sea to the Hawaiian Islands, common on the Great Barrier Reef but not recorded from New Caledonia.

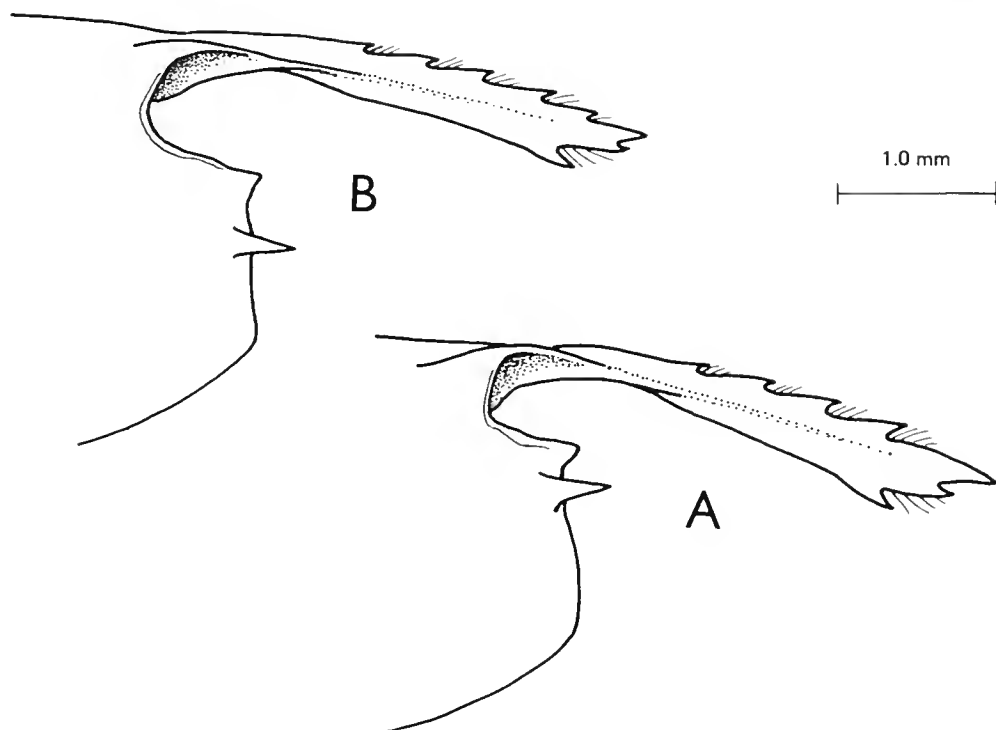


Fig. 2. *Coralliocaris graminea* (Dana): anterior carapace and rostrum. A, ♂, CL 3.5mm. B, ♀, CL 3.0mm.

***Coralliocaris graminea* (Dana)**

(Fig. 2)

*Oedipus gramineus* Dana, 1852:25.

*Coralliocaris graminea* — Stimpson, 1860:38.

**Material examined** — 1 ♂, 1 ♀, CLs 3.5, 3.0, Roach Is., 25m, February 1979, AMPI 1063, NTM Cr. 000459.

**Remarks** — The two examples have a rostral dentition of 4/2, 5/2, with the rostrum relatively deep, which separates *C. graminea* from the closely related *C. viridis*. *C. graminea* is a common and well known associate of a wide variety of corals of the genus *Acropora*.

**Distribution** — Common and widespread throughout most of the Indo-West Pacific region with the exception of the Hawaiian Islands, but not yet recorded from New Caledonia.

ALPHEIDAE

***Alpheus lottini* Guerin**

*Alpheus lottini* Guerin, 1829, pl. 3 fig. 3; 1838:38.

*Alpheus ventrosus* Milne-Edwards, 1837:352.

*Alpheus laevis* Randall, 1839:141.

**Material examined** — 1 ♂, 1 ovig. ♀, CLs 7.0, 8.7, Erscott's Hole, 4m, 13 December 1979, AMPI 953, NTM Cr. 001349.

**Remarks** — The pair of specimens appear quite typical. *A. lottini* is one of the commonest and most widely distributed Indo-West Pacific alpheid shrimps that is normally found in association with corals of the genera *Pocillopora*, *Stylophora* and *Seriatopora*. It occurs on both sides of the East Pacific barrier and is established in western American waters.

**Colouration** — The two specimens show the typical colour pattern of this species, a general orange red colouration with a darker brown median dorsal band, expanded anteriorly round eyes, and with reddish speckling over the chelae of the first pair of pereopods.

**Distribution** — Throughout the Indo-West Pacific region from the Red Sea to Hawaii. Common on the Great Barrier Reef and has been also reported from New Zealand (Banner & Banner, 1982).

***Alpheus pacificus* Dana**

*Alpheus pacificus* Dana, 1852:544, pl. 34 fig. 5.

**Material examined** — 1 ♂, CL 10.0, Comet's Hole, 3m, 14 February 1979, AMPI 1057, NTM Cr. 001351; 1 ♀, CL 14, Lagoon, 2m, 26 November 1979, AMPI 977, NTM Cr. 000460; 1 ovig. ♀, CL 11, Ned's Beach, 19 February 1980, AMPI 1017, NTM Cr. 001350.

**Remarks** — This species has been previously reported from Lord Howe Island, and is also known from Norfolk Island (Banner & Banner, 1982). The present specimens agree with previous published information. The species is one of the commonest large shallow water Indo-West Pacific alpheid shrimps and reaches a total of about 50mm.

**Distribution** — Throughout Indo-West Pacific region from Red Sea to Hawaii. Common on the Great Barrier Reef, but not recorded from New Caledonia.

***Synalpheus bituberculatus* De Man**

*Synalpheus bituberculatus* De Man, 1910:294.

**Material examined** — 1 ovig. ♀, CL 4.5, Erscott's Hole, 4m, 13 December 1979, AMPI 956, NTM Cr. 001353.

**Remarks** — The species has been commonly reported in association with sponges (Banner & Banner, 1975), where it is usually found in male-female pairs.

**Colouration** — Generally pale yellowish with dark olive green ovary; fingers of major chelae and ova orange.

**Distribution** — Occurring in the Indian Ocean, Thailand, Indonesia, Singapore, to Japan and the Philippines. In Australia, recorded from the Abrolhos Islands, Darwin, Torres Straits and the Great Barrier Reef. Not yet recorded from New Caledonia.

***Synalpheus neomeris* (De Man)**

*Alpheus neomeris* De Man, 1897:734, fig. 61 ade.

*Synalpheus neomeris* Coutière, 1905:869, fig. 1.

**Material examined** — 1 ♀, CL 2.4, Sugarloaf Is., 12m, 24 February 1980, AMPI 1038, NTM Cr. 001352.

**Remarks** — The single example agrees well with description and figures of Banner & Banner (1975), particularly with reference to the form of the dactylus of the ambulatory pereopods, but the ventral aspect of the merus of the third pereopod is armed with only a single distal ventral spine instead of a series of spines. The species is a common associate of nephtheid aleyonarians but has also been reported to associate with sponges and bryozoans.

**Distribution** — Widespread, from the Red Sea to Japan and the Philippines. Known from tropical Australian waters, including the Great Barrier Reef, but not recorded from New Caledonia.

## HIPPOLYTIDAE

***Thor paschalis* (Heller)**

*Hipolyte paschalis* Heller, 1862:276, pl. 3 fig. 24.

*Thor paschalis* Kemp, 1914:94, pl. 1 figs. 6-10.

**Material examined** — 1 ♂, CL 1.7, Lagoon, 2m, 27 November 1979, AMPI 973, NTM Cr. 000553.

**Remarks** — The single example is rather damaged but is without supraorbital spines, has a rostral dentition of 3/1, and lacks a proximal lateral process on the stylocerite, so can be safely referred to *T. paschalis*, a common tropical species of the genus found mainly in association with algae in shallow water. The species is normally cryptically coloured.

**Distribution** — Widespread, from the Red Sea to the Mariana Islands. Occurs on the Great Barrier Reef but not reported from New Caledonia.

## DISCUSSION

The present brief report provides some information on eleven species of caridean shrimp, ten of which have not been previously reported from Lord Howe Island. Undoubtedly a large number of species remain yet to be collected and identified. Representatives of all major tropical shallow water families can be expected to occur but several are so far

unrepresented, i.e. Processidae, Crangonidae, and many more species of both the Pontoniinae and Alpheidae, as well as some of the Palaemoninae, can be expected to be present.

The species so far identified show a close link with the Australian fauna and all except one (*Rhynchocinetes balssi*) are to be found on the Australian east coast, mostly in abundance. The caridean fauna of New Caledonia has received little attention and, although 29 pontoniine shrimps have been definitely recorded from there (Bruce, 1980) it seems only one of the Lord Howe species, *Periclimenes holthuisi*, has been found so far in both localities. It is probable

that all the other species, except possibly *R. balssi*, will ultimately be found to occur in New Caledonian waters. The caridean fauna of Norfolk Island has also been little studied. Grant and McCulloch (1907) record only one marine species, *Alpheus edwardsii*, which has also been reported from Middleton Reef (McNeil, 1937) and occurs on all Australian shores (Banner & Banner, 1982), but this species has not been found at Lord Howe Island, New Zealand or New Caledonia. It is unlikely that these shrimps will be found in New Zealand waters as they are characteristic coral reef species. Their distributions are summarized in the table below:-

	East Australia	Lord Howe Is.	New Zealand
1. <i>Rhynchocinetes balssi</i> Gordon	—	+	+
2. <i>Periclimenes ornatus</i> Bruce	+	+	—
3. <i>Periclimenes madreporae</i> Bruce	+	+	—
4. <i>Periclimenes holthuisi</i> Bruce	+	+	—
5. <i>Harpilopsis depressa</i> (Stimpson)	+	+	—
6. <i>Coralliocaris graminea</i> (Dana)	+	+	—
7. <i>Alpheus lottini</i> Guérin	+	+	+*
8. <i>Alpheus pacificus</i> Dana	+	+	—
9. <i>Synalpheus bituberculatus</i> De Man	+	+	—
10. <i>Synalpheus neomeris</i> (De Man)	+	+	—
11. <i>Thor paschalis</i> (Heller)	+	+	—

\*(This report is most probably erroneous, D. M. Banner, *in litt.*)

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#### RESUMÉ

Un rapport sur onze espèces de crevettes provenant de Lord Howe Island et notées pour la première fois, est présenté. Toutes ces espèces, sauf une, sont bien connues sur les récifs de corail de la côte est d'Australie et, en général, sont d'une large distribution dans la région Indo-Pacifique Orientale. L'exception est *Rhynchocinetes balssi* Gordon, qui a été rapportée de Nouvelle Zelande. Sans doute, beaucoup d'autres espèces de carides restent à être découvertes à Lord Howe Island.

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